

### **3.0 PROPOSED ACTION**

#### **3.1 OPERATION AND CONFIGURATION OF FCRPS AND BOR PROJECTS**

The Action Agencies have proposed, as described in their biological assessment (BPA et al. 1999), to continue current FCRPS operations that implement the 1995 RPA as supplemented, while developing measurable performance standards to guide future system improvements.

The FCRPS operates to serve an array of individual project and system purposes. Individual project purposes vary widely and may include power generation, flood control, irrigation, recreation, fish and wildlife, and other purposes defined by congressional authorizations. Systemwide purposes focus on supplying electrical energy to meet existing and projected loads, flood control, and more recently, salmon recovery.

In addition to the BOR projects in the FCRPS (e.g., certain facilities and operations at the Grand Coulee Project and Hungry Horse Dam and reservoir), the Action Agencies propose to continue current operations of the BOR's other projects, as described in the biological assessment.

Elements of the proposed action designed to enhance salmon survival are described below.

#### **3.2 OBJECTIVES FOR SALMON AND STEELHEAD**

The Action Agencies recommend that mainstem flow operations be based on the 1995 RPA as supplemented by the 1998 FCRPS Biological Opinion. For SR salmon and steelhead, the seasonal average flow objectives would range from 85 to 100 thousand cubic feet per second (kcfs) during spring (April 3 to June 20) and 50 to 55 kcfs during summer (June 21 to August 31) at Lower Granite Dam. Flow objectives in the lower Columbia River, as measured at McNary Dam, would range from 220 to 260 kcfs during spring (April 20 to June 30) and 200 kcfs during summer (July 1 to August 31). The flow objectives in any given year would be determined using a sliding scale based on forecasted runoff, as specified in the 1995 RPA. To benefit UCR steelhead, in the mid-Columbia reach the 1998 Supplemental FCRPS Biological Opinion set a further spring flow objective of 135 kcfs (April 10 to June 30) at Priest Rapids Dam.

System operators will continue to confer with NMFS and the regional fisheries comanagers to determine how to best manage in-season conditions relative to the seasonal average flow objectives. Flow management would continue to emphasize refill of headwater storage projects by June 30 in the Snake River basin and by the end of the July 4 weekend in the Columbia River basin each year (or as soon as possible after July 4 at Libby), although that priority would remain subject to in-season considerations. Reservoir drafts would be limited to 80 feet at Dworshak (elevation 1,520 feet), 10 feet at Grand Coulee (elevation 1,280 feet), 20 feet at Hungry Horse (elevation 3,540 feet) and 20 feet at Libby (elevation 2,439 feet).

For fall chinook and chum salmon spawning below Bonneville Dam, the FCRPS would be operated to use storage to augment natural flows, in an attempt to provide a flow level of 125 kcfs during early November through early April while maintaining the 1995 RPA requirement for storage projects to be at their upper (flood control) rule curve elevation on April 10 of each year. The Action Agencies recognize that in some years it may be impossible to meet both these flows and the reservoir levels in the spring, in which case priority will be on refill. As natural conditions permit, a conservative stepwise approach would allow higher flows during late fall and early winter (i.e., providing additional spawning habitat in the Ives Island area). If in-season data on reservoir operations indicate that the 1995 RPA, the 1998 Supplemental FCRPS Biological Opinion, and Vernita Bar flow requirements cannot be met by providing chum flows, the Action Agencies will confer with NMFS to modify operations.

### **3.2.1 Water Quality**

The Action Agencies propose to continue to operate the FCRPS to reduce water temperatures during periods of juvenile and adult fish migration and to reduce the harmful effects of elevated levels of spill-generated TDG on anadromous and resident fish. Based on recommendations of the Regional Forum's Technical Management Team, flows would be released from Dworshak Dam to help reduce water temperatures in the lower Snake River for migrating fall chinook salmon and steelhead. Gas concentrations would be controlled by limiting the amount of involuntary spill at all dams, installing gas-abatement structures that reduce the generation of TDG, and taking other operational and power-marketing actions. In years of high runoff, inflows to FCRPS projects can result in forced spill or TDG levels exceeding 120%. In addition, voluntary spill to improve fish passage will be managed to 115% or 120% TDG, or as approved through variances to the 110% gas standard.

### **3.2.2 Specific Project Operations**

#### **3.2.2.1 Libby**

Libby Reservoir would be maintained throughout fall and winter to achieve a 75% chance of reaching flood control elevation on April 10. From late spring through July, the Action Agencies would release water to achieve the goals set for white sturgeon in the Kootenai River. If the elevation of Lake Koocanusa is above 2,439 feet at the conclusion of the sturgeon operations, the Action Agencies would use water above elevation 2,439 feet to provide flows to meet salmon objectives within the turbine capacity of Libby Dam. Efforts would be made to minimize the effect of a second peak flow fluctuation below Libby until August 31 for the benefit of resident fish species. The Action Agencies would consider the Technical Management Team's recommendations for Libby operations, along with others (including the NWPPC's) in making final operating decisions.

### **3.2.2.2 Hungry Horse**

Hungry Horse Dam would be operated during the fall and winter months to achieve a 75% chance of refill to its April 10 upper rule curve. Hungry Horse Dam would also operate to meet a year-round minimum instantaneous streamflow of 3,500 cubic feet per second (cfs) in the Flathead River near Columbia Falls to protect instream habitat for native resident fish populations, including ESA-listed bull trout. Using water supply forecasts, the Action Agencies would operate the project to refill no later than the end of the July 4 weekend. The Action Agencies would draft the project to 3,540 feet to assist in meeting the summer anadromous fish flow objective at McNary Dam, as coordinated through the Technical Management Team. Because a selective-withdrawal, water-temperature-control structure has been installed at Hungry Horse, the Action Agencies would plan water releases to try to meet state-recommended water temperature guidelines during the period June through October.

### **3.2.2.3 Grand Coulee**

Grand Coulee Dam would be operated according to the 1995 RPA and the 1998 FCRPS Supplemental Biological Opinion. The Action Agencies would operate the project during January through April 10 to ensure an 85% confidence of refill to flood control elevation. BOR would limit winter drafts to elevation 1,265 feet, 1,260 feet, 1,250 feet, and 1,240 feet at the end of December, January, February, and March, respectively (except when deeper drafts would be needed for flood control or power emergencies). Beginning in April, Grand Coulee would be operated to refill to full pool (elevation 1,290 feet) by the end of the July 4 weekend. From April 10 through August 31 of each year, releases would be made to augment flows for anadromous fish, as coordinated by the Technical Management Team. The reservoir would be drafted as low as 1,280 feet elevation by August 31 during average and above-average water conditions. After Labor Day weekend, the Action Agencies would try to refill Lake Roosevelt by the end of September to elevation 1,283 feet or higher for kokanee spawning needs. Water would also be released from Grand Coulee to meet an average daily minimum flow requirement of approximately 30 kcfs or higher as needed to meet minimum flows at Priest Rapids Dam. The Priest Rapids minimum flow is the higher of 36 kcfs or the Vernita Bar flow requirement during the December-through-May period. The Action Agencies would continue to coordinate with regional interests to develop operations that minimize the potential stranding of post-emergent fall chinook in the Hanford Reach.

### **3.2.2.4 Albeni Falls**

The typical maximum reservoir operating range for this project, which controls water surface elevations in an upstream natural lake, is from elevation 2,051 to 2,062.5 feet. The reservoir would be drawn down beginning on Labor Day for power generation and flood control purposes and would typically achieve its lowest elevation between November 15 and 20 of each year. Variations in lake level after November 20 would be controlled to within 1 foot to protect established kokanee spawning areas. Experimental operations have occurred for the last several

winters to examine the relationship between winter lake levels and kokanee spawning. During winter 2000, a lake elevation of 2,053 feet was monitored to evaluate potential effects on resident species and lake productivity. Before this experimental operation, Albeni Falls was drafted farther, to elevation 2,051 feet, during winter operations. Under the Action Agencies' current activities, operations during January through March 31 would allow for some fluctuation in reservoir elevations for power production and flood control, but the elevation could not drop below the last minimum water level established in December. From April through June, the reservoir would refill. During the summer months, the fluctuations would be maintained within a 0.5-foot limit (i.e., between 2,062- and 2,062.5-foot elevation).

### **3.2.2.5 Dworshak**

Dworshak Dam would continue to be used to augment flows in the Snake River for the intended benefit of juvenile and adult summer-migrating salmon and steelhead from April through August. Dworshak would be full by June 30 and would draft to its August 31 draft limit of elevation 1,520 feet (80 feet from full pool) to provide water to meet anadromous fish flow objectives. The project would be operated to release a minimum of 1,300 cfs between September and April to enhance the probability of refill to the flood control rule curve elevation by the beginning of April. Because Dworshak Dam has a temperature control outlet facility and a multilevel outlet, cool water would typically be released during July or August to reduce water temperatures in the lower Snake River.

### **3.2.2.6 BOR's Snake River Projects**

In the July 27, 2000, Draft FCRPS Biological Opinion, the proposed action included the continued operation and maintenance of BOR's 11 projects in the Snake River basin (Table 3.2-1). The Department of Justice, BOR, and NMFS have been engaged in negotiations with the state of Idaho and Idaho water interests to settle Federal and Tribal water claims in the Snake River basin as part of the general adjudication of water rights taking place in Idaho District 1 Court. Termed the Snake River Basin Adjudication, this process will define the water rights under Idaho law of all parties having interests in Snake River basin water within Idaho's boundaries. To date, agreement has not been reached. Since discussions are continuing, BOR has indicated that the proposed action for its 11 irrigation projects in the Snake River basin may be different from those measures set forth in its December 21, 1999, biological assessment. Accordingly, BOR has asked to extend the consultation on these 11 projects pending a revised proposed action and analysis of effects. Because all BOR projects upstream of Hells Canyon Dam, including those in Oregon, have similar and additive effects on listed fish, NMFS and BOR agree that it would be best to consult on these projects simultaneously. Therefore, at BOR's request, NMFS has agreed to extend the current consultation with regard to BOR's projects in the Snake River basin and to exclude those projects from this biological opinion. BOR anticipates providing the necessary additional information, and NMFS anticipates issuing a supplemental biological opinion on those projects before water must be delivered from the projects for irrigation use in the 2001 growing season.

**Table 3.2-1.** BOR projects in Snake River basin.

Project	Location	Subbasin or Stream
Minidoka	Southern Idaho and western Wyoming from Twin Falls Idaho to Jackson Lake, Wyoming	Snake River
Palisades	Eastern Idaho, on Wyoming border	Snake River
Michaud Flats	Southern Idaho, near Pocatello	Snake River
Little Wood River	South-central Idaho, north of Twin Falls	Little Wood River
Boise	Southwest Idaho, near Boise	Boise and Payette rivers
Mann Creek	Southwest Idaho, northwest of Boise	Weiser River
Owyhee	Eastern Oregon and southwest Idaho, near Ontario Oregon	Owyhee and Snake rivers
Vale	Eastern Oregon, west of Ontario	Malheur River
Burnt River	Eastern Oregon, south of Baker City	Burnt River
Baker	Eastern Oregon, near Baker City	Powder River
Lewiston Orchards	West-central Idaho, near Lewiston	Clearwater River

### 3.2.2.7 Columbia River Treaty and Non-Treaty Storage

To improve the likelihood of achieving salmon flow objectives in the mainstem Columbia River, the Corps and BPA propose to continue to negotiate mutually beneficial agreements with BC Hydro annually for use of their Columbia River Treaty storage and non-Treaty storage in Canada. Under Treaty operations, these actions include 1 million acre-feet of storage for salmon flow augmentation in the Columbia River, stored above the Detailed Operating Plan Treaty Storage Regulation levels from January to April 15 and then released from May through July, and storage exchanges between Libby and Canadian reservoirs, which would reduce potential adverse effects of salmon flow augmentation drafts on recreation, resident fish, and power in the U.S. and Canada. Under the Non-Treaty Storage Agreement, both BPA and BC Hydro store water in Mica Reservoir during May and June for release in July and August. BPA releases all its May/June stored water during July and August for salmon flows, whereas Canada releases half of its May/June stored water during July and August and the other half at its discretion.

### 3.2.3 Spill for Fish Passage

Spill is an action to reduce turbine-related mortality of juvenile salmon and steelhead at lower Snake and Columbia River hydroelectric projects. Spill will be at the levels recommended in the 1998 Supplemental FCRPS Biological Opinion, assuming that waivers are obtained from the states of Oregon and Washington to exceed their 110% TDG state water quality standards. The Action Agencies would continue to provide spill for fish passage, but not to exceed TDG levels allowed under the standard or any modifications to it.

### **3.2.4 Juvenile Fish Transportation**

Juvenile salmonids would be collected at several dams on the lower Snake and Columbia rivers and transported downstream by truck or barge to release points below Bonneville Dam in an effort to improve survival over that experienced by inriver migrants. The Action Agencies would continue to provide spill levels that spread the risk between transported and inriver migrants. Spring migrants would not be transported from McNary Dam. Generally, summer juvenile migrants (those collected after the June 20 planning date) would be transported from all four transport facilities. Spill would be limited during that period so that more of the run would approach the powerhouse and be diverted by screens into collection facilities. Once collected, nearly all would be transported by barge or truck to below Bonneville Dam and released.

### **3.2.5 Minimum Operating Pool (MOP)**

Some mainstem run-of-river FCRPS reservoirs on the lower Snake River and John Day Reservoir on the Columbia River would be lowered during the spring and summer migration periods to increase water velocity (intended to increase the migration rate and survival of salmonid smolts). Three of the lower Snake River facilities (Little Goose, Lower Monumental, and Ice Harbor dams) would be operated within 1 foot of the MOP from April 3 until adult fall chinook begin to enter the Snake River, as recommended by the Technical Management Team. Lower Granite Dam would be operated within 1 foot of the MOP from April 3 through November 15 of each year. After November 15, all four reservoirs would be operated within their normal 5-foot operating ranges. McNary, The Dalles, and Bonneville reservoirs would be operated within their normal ranges. From April 20 to September 30 each year, John Day Reservoir would be operated within a 1.5-foot range above elevation 262.5 feet, as long as irrigation withdrawal remained unaffected and additional space was not needed for flood control. The pool elevation would be raised if irrigation pumping problems occurred.<sup>1</sup> During the fall and winter months, all four lower Columbia River projects would be operated within their normal operating range, with the exception of temporary flood control storage at John Day, if needed.

### **3.2.6 Peak Turbine Efficiency Operation**

Under the current action, the Action Agencies would operate turbines at the eight FCRPS mainstem Snake and Columbia River projects at a high efficiency (within 1% of peak operating efficiency) to reduce the mortality of fish passing through turbines. Operations outside this range would be limited and most likely implemented at the recommendation of the Technical Management Team to abate supersaturated levels of TDG. Specifics of turbine operations that would achieve 1% efficiency are contained in the Corps' annual Fish Passage Plan.

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<sup>1</sup>It has been determined that John Day Reservoir cannot be operated at its MOP elevation of 257 feet during the juvenile fish migration season, because of adverse effects on irrigation pumping.

### **3.2.7 Fish Passage Facilities**

#### **3.2.7.1 Juvenile Fish Bypass**

Juvenile fish bypass would be provided at Corps mainstem hydroelectric projects by a variety of methods, including screened turbine intakes with bypass/collection facilities at Lower Granite, Little Goose, Ice Harbor, Lower Monumental, McNary, John Day, and Bonneville dams; ice and trash sluiceway passage at The Dalles Dam; and/or spill for fish passage. Surface bypass technology is under evaluation at Lower Granite, Bonneville, and John Day dams. Juvenile fish bypass facilities would be operated continuously during the fish passage period from April through November. All juvenile fish bypass systems would be operated and maintained based on criteria in the Corps' Fish Passage Plan. The plan would be reviewed and updated annually after coordination with the regional fisheries agencies and Indian Tribes and in coordination with NMFS. In-season changes to operating criteria and maintenance schedules may be recommended by the Technical Management Team.

#### **3.2.7.2 Adult Fish Passage**

All the mainstem FCRPS hydroelectric dams in the Columbia/Snake migration corridor have fish ladders and associated auxiliary water supply and powerhouse collection facilities. The adult fish passage period would be March through November at Bonneville, The Dalles, and John Day dams and March through December at McNary and the four lower Snake River projects. Criteria for the operation and maintenance of adult passage facilities would be also contained in the Corps' Fish Passage Plan. Adult salmonids (and other species) would be counted at each mainstem dam, with the schedule varying according to location and time of year.

### **3.2.8 Other Activities**

A number of research studies covering various aspects of juvenile and adult fish passage would be implemented annually based on provisions in NMFS' biological opinions and through coordination with regional work groups. These studies would be intended to provide information related to key passage uncertainties, for improving operational criteria, modifying or improving existing fish passage facilities, and constructing new passage facilities.

Special operations will be necessary for several research studies developed in response to the actions identified in the NMFS biological opinion. Their successful implementation will depend on special project operations. Research-related project operations would be developed with NMFS, coordinated with the regional forums, and identified in the Fish Passage Plan.

### **3.2.9 Predator Control Program**

The Northern Pikeminnow Management Program, designed to substantially reduce predation losses of juvenile outmigrants, would continue. The program includes harvest technology

research, prey protection measures, basic biological research, and a bounty- or sport-reward fishery to encourage the public to harvest northern pikeminnows. Caspian terns have also been identified as a major predator on juvenile salmonids, particularly in the Columbia River estuary near Rice Island. The Action Agencies would continue to conduct studies to determine the significance of predation by fishes and birds throughout the FCRPS and to identify measures to reduce juvenile salmonid losses to these predators. The measures may include expanding activities that are already under way (e.g., avian lines, water cannons), as well as initiating new measures.

### **3.2.10 Adaptive Management Framework Through Adoption of Performance Measures**

The Action Agencies' biological assessment focuses on establishing a course of action for the FCRPS that avoids jeopardy and facilitates the future recovery of listed stocks. Avoidance of jeopardy and facilitation of recovery necessarily requires that the Action Agencies consider actions and improvements in the hydrosystem in connection with actions and improvements expected for habitat, harvest, and hatcheries. Specific actions identified above would provide the base for future operations and actions in the hydrosystem, subject to adjustment over time. The biological assessment also outlines a proposed "Construct for Achieving Survival Improvements" that would establish measurable biological performance standards for the hydrosystem, prioritize actions, and estimate the likely outcome of future actions. The Construct would provide a basis for some experimental management actions to improve understanding of key uncertainties and, thus, the ability to implement future actions to achieve recovery.

Long-term actions identified or evaluated in the biological assessment as potentially of benefit to listed species include ongoing studies evaluating the feasibility of lower Snake River actions, such as dam breaching, and the John Day phase 1 report that addresses juvenile fish passage alternatives (Corps, 2000c). Various actions under consideration to improve TDG and temperature conditions for the benefit of anadromous and resident species are also described, as well as various system modifications, including new turbine designs, surface bypass/collectors, and improved transport facilities. Changes in storage project operations and configurations in the Snake and lower Columbia rivers for the benefit of anadromous and resident fish (e.g., gas abatement and increased flow augmentation) are also described.

The Action Agencies' Construct is based on establishing an overall recovery goal. It would provide a method of defining desired levels of improvement in habitat, harvest, hatcheries, and hydropower, developing performance standards associated with these levels of improvement, evaluating and setting priorities for possible actions in each area, and selecting the most appropriate combination of actions for each category. The Action Agencies propose to use this method to evaluate possible future hydro actions, recognizing that overall recovery goals and associated obligations for survival improvements among all the categories may not be established within the timeframe of the FCRPS consultation. Accordingly, the Action Agencies



recommend that interim performance standards be developed during consultation to enhance decision-making and to provide a model for developing performance standards for all four areas.

### **3.3 ISSUANCE OF SECTION 10 PERMIT FOR JUVENILE FISH TRANSPORTATION PROGRAM BY NMFS**

During 1999, the Corps' Walla Walla District applied to NMFS for a new Section 10 permit for the JFT. As an interim measure, NMFS extended the Corps' existing Permit 895 under authority of Section 10 of the ESA and NMFS regulations governing ESA-listed fish and wildlife permits (50 CFR parts 217 through 227). The extended permit is valid until December 31, 2000, or until replaced by the new permit. The Corps is conducting a feasibility study, in conjunction with this consultation, to evaluate several alternatives to juvenile fish transportation. The extension of Permit 895 allows the duration of the permit to coincide with this reinitiation of ESA Section 7 consultation on the long-term management strategy for the FCRPS. Permit 895 authorizes the Corps' annual direct takes of juvenile endangered SR sockeye salmon, juvenile threatened SR spring/summer chinook salmon (naturally produced and artificially propagated), juvenile threatened SR fall chinook salmon, and juvenile endangered UCR steelhead (naturally produced and artificially propagated). All are associated with the Corps' JFT at four hydroelectric projects on the Snake and Columbia rivers (Lower Granite, Little Goose, Lower Monumental, and McNary). Permit 895 also authorizes the Corps' annual incidental takes of ESA-listed adult fish associated with fallbacks through the juvenile fish bypass systems at the four dams. With regard to the Corps' request to include an annual take of adult and juvenile endangered UCR spring chinook salmon, NMFS determined that any take of this species associated with Corps transportation activities would be incidental under the existing requirement to suspend transportation operations from McNary Dam during the spring migration period.

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